P2631 : Genetic stress echocardiography: role of A2a receptors polymorphism in modulating coronary flow reserve response in non-ischemic dilated cardiomyopathy

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Background: Vasodilator stress imaging is based on coronary A2a receptor stimulation via endogenous adenosine (with dipyridamole administration), exogenous adenosine, or selective A2a receptor stimulation (with binodenoson).The recognized inter-individual variability in response to adenosine might be in part determined by genetic polymorphism in A2a adenosine receptors. Aim: to assess whether A2a receptor (263 C>T and 1976 C>T) polymorphism affects the coronary flow reserve (CFR) response in patients with non-ischemic dilated cardiomyopathy (DCM).

Methods: we evaluated 44 DCM patients 34 males; age 62±9 years) by transthoracic dipyridamole (0.84 mg/kg) stress echocardiography. All patients had an ejection fraction <40% (mean 21.1±16.3%) and angiographically normal coronary arteries with NYHA class <3. CFR was assessed on left anterior descending coronary artery using Doppler as the ration of maximal peak vasodilation (dipyridamole) to rest diastolic flow velocity. All patients underwent peripheral blood sampling and A2a receptor genotyping with PCR and enzyme restriction analysis.

Results: CFR was 2.1±0.6 (range=1.5-4). There was no correlation between CFR and 263 C>T variant of A2a gene. However, patients with 1976 TT genotype had significantly lower values from 1976 CC patients ($p<0.05$). The 7 patients omozygous for 1976 TT had an OR=8.8 (95% CI, 1-81, $p=0.04$) for abnormal CFR.

Conclusion: In DCM patients 1976 C>T polymorphism of the adenosine A2A receptor gene may affect CFR response. In particular, the 1976-TT variant of A2a gene blunts the coronary vasodilatory response.